

PUTATIVE NEUROELECTRIC CORRELATES OF SMOKING BEHAVIOR

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Since the various smoking-related changes in mood states and behavior are presumably mediated by alterations in neuronal activity, considerable research effort has been devoted to uncovering possible neurophysiological correlates of acute cigarette smoking. The scalp-recorded electroencephalogram (EEG) provides an ongoing record of neuroelectric activity of the brain, and although admittedly it is a gross measure of brain function, lacking anatomic depth and specificity, it provides the best and most direct objective measure currently available for continuous assessment of the functional state of the CNS.

Although the usefulness of EEG is obviously enhanced when it is supplemented with concurrent subjective/behavioral measures, it is suggested here that the characterization of EEG profiles of smoking behavior may, in their own right, provide insight into the psychological/motivational states underlying tobacco use. The purpose of this paper is to present the results of three brain electric studies which attempted to:

- (1) quantify the acute dynamic and static EEG profile changes as assessed during and immediately following the smoking of a single cigarette;
- (2) examine the similarities/differences of acute EEG profiles derived from the smoking of low and medium tar-nicotine (T/N) yield cigarettes and
- (3) assess the scalp distribution of EEG changes induced by the smoking of cigarettes with varying T/N yield.

The results of these studies indicate that: (1) smoking exerts a psycho-stimulant EEG profile which is characterized not by desynchronization, i.e. alpha reduction, but by alpha enhancement and is evident by the first 4 to 5 puffs; (2) smoking low T/N yield cigarettes exerts a similar but less intense EEG profile change as observed with medium T/N yield cigarettes and that (3) the smoking of cigarettes with increasing T/N yields results in a progressive posterior-to-anterior spreading of EEG effects across the scalp. The significance of these neuroelectric profiles are discussed in relation to theories of smoking motivation.

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